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# **Cheating in video games – causes and some consequences**

Grzegorz Pochwatko<sup>1</sup>

Instytut Psychologii PAN

Jean-Christophe Giger<sup>2</sup>

Universidade do Algarve

## **Abstract**

Video games are extremely popular in contemporary societies. It's hard to find people that do not have experience with some form of games. Temptation to cheat arose along with the rapid development of games. The snowballing capabilities of equipment and increasing level of complexity of games provides multiple ways to gain an unfair advantage. In this paper we make a brief review of definitions of cheating in games, and try to name consequences of cheating in games. The results of current research carried out in many countries, including our own, show that playing video games and cheating are not significantly related with cheating in real life. The tendency to cheat results from personality traits and situational factors. Individuals with a high level of this tendency cheat in games and in life. Video games do not raise the tendency to cheat, and we can therefore play without having to worry that our moral standards will suffer.

The popularity of video games has grown enormously alongside accessibility to devices that run them. Since the days of Pong<sup>3</sup>, which turned from curiosity into ‘fever’ for millions of users and finally ended up as an icon for geeks<sup>4</sup> and hipsters<sup>5</sup>, the world saw thousands of games. Mobile technologies further moved games into the mainstream, and there

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<sup>1</sup>Please direct all the correspondence concerning this article to [grzegorz.pochwatko@psych.pan.pl](mailto:grzegorz.pochwatko@psych.pan.pl)

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<sup>3</sup> Pong – electronic version of table tennis, first popular video game in the world (Bryant, Davies, 2006)

<sup>4</sup> Geek – freak or weirdo; a person exceptionally interested in (usually) one specific domain – here, computer  
geek – an individual that reflects the most obscure stereotype of a hacker (Raymond, 1996)

<sup>5</sup> Hipster – a person belonging to the subculture declaring independence from “the mainstream”, overly emphasizing his/her originality. Common characteristics: “artistic” outfit and unconventional interests (Wikipedia)

are probably very few among us that have not had any contact with games. The development of new technologies pushed more and more games out of the common boundaries of pure entertainment. In addition to traditional entertaining games, alternatives such as simulations, trainings, and therapeutic and educational games have appeared<sup>6</sup>. In laboratories (including VRLab, Institute of Psychology, PAS) we use computer games for research purposes<sup>7</sup>. Whatever the main goal, in every game we encounter various tasks to be accomplished, obstacles to overcome, and opponents that will try to stop us from doing so. Facing difficulties while striving to achieve game goals may create the temptation to cheat. In many cases cheaters may get away without any consequences of cheating in the digital reality of a game. Does this have any impact on behaviour out of the game?<sup>8</sup>

Feross Aboukhadijeh (2009) provocatively speaks of the “pathological” phenomena accompanying the growing popularity of games. Hundreds of users inspired by the works of game creators turned into hackers<sup>9</sup> and cheaters<sup>10</sup>. No one can deny the presence of such an apparently negative phenomena. Some of them, objectively speaking, are quite serious crimes. Stealing someone’s virtual identity (like stealing a character in an MMO game<sup>11</sup>), virtual goods, or virtual (in-game) cash (virtual gold, emeralds etc.) that can be exchanged to very real dollars, zlotys, or euros not only spoils the fun for others, but can cause them real loss.

On the other hand, one cannot deny that video game hating sweet plastic pony lovers are totally blind to positive phenomena, such as creative changes made to the original games by talented users, making the product more attractive for other players and expanding the ideas of professional designers.

Both malicious and creative changes made to the code of a game are equally labelled *hacks*, *cheats*, and/or *mods*, which can be classified as cheating (by game developers,

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<sup>6</sup> So called serious games – games in which entertainment is not the main goal. Usually training, research or educational applications.

<sup>7</sup> Participants are placed in virtual environment of a game, and interact with each other as avatars. Their behavior can therefore be precisely observed because it is fully digitalized. Researchers also have full control over the experimental situation, which is replicable and identical from one participant to another. Thanks to the above, they can keep a high level of realism (as in field studies) without losing control (as in a lab experiments).

<sup>8</sup> Is there any life out of the game?

<sup>9</sup> Hacker – a person that possesses knowledge and abilities in programming, and “enjoys exploring the details of programmable systems and how to stretch their capabilities” (capabilities that are frequently deeply hidden), as opposed to most users (Raymond, 2003).

<sup>10</sup> Cheater – simply speaking, a person that cheats, which does not reflect the broad meaning of this word in the world of games and gamers.

<sup>11</sup> MMO game – massive multiplayer online game. A game in which a lot of people play with each other via internet.

publishers, and other players). But cheating in the virtual and real world differ somewhat, although recent data suggest that they tend to be related. It is worthwhile to outline the history of game development in order to understand it.

### **The beginnings – the very first Easter egg in the world of pixels**

The beginning seems innocent, although the main motive was probably vanity. After early game consoles became popular, some game titles started to become famous. A good game was akin to a new kind of art. The first game developers, beside the programming ability, were talented. The principles of level design were discovered from one title to another, making the game amusing, neither too easy, nor too difficult. Many independent developers did not pretest their ideas. Instead, they simply put the prototypes into games and published them. The market quickly verified those concepts. Some of the titles quickly became a great success. The authors were not nearly as lucky. Only game industry historians and enthusiasts know their names, even if they produced hit after hit. Fame and glory was for the publishers: the house always wins. Warren Robinett, developer of *Adventure*, one of the classic Atari 2600 games, decided to grab the attention of fans and hid the first widely known ‘Easter egg’<sup>12</sup>. Ancient castle tomb explorers had a chance of accidentally (or after effortful clicking) finding a secret “key” (a grey pixel on the wall of the same color<sup>13</sup>) that opened an entrance to a secret chamber. The chamber contained nothing but the inscription “Created by Warren Robinett”. No one but the creator knew about the secret chamber, and he kept the secret till the game was officially published and entered the market (Montfort, Bogost, 2009). One may say ‘so what?’, but from that day on<sup>14</sup> simply finishing the game was not enough for true players. The true laurels were worn by those that discovered all of the secrets. It soon became apparent that it’s not proper to create a game without hidden places or functions. The Easter cybereggs themselves evolved in a way directly associated with *cheating*. The next milestone is Tomohiro Nishikado’s *Space Invaders*. The arcade game was so popular that it is believed

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<sup>12</sup> This is where vanity enters – game fans loved *Adventure*, but they associated it with Atari, not Robinett. Or maybe it is not supposed to be called vanity at all, but creator’s privilege instead. It was *Robinett’s Adventure* – just like *DaVinci’s Mona Lisa* after all.

<sup>13</sup> Let us imagine for a while the cruelty of the designer – there’s a wall in front of us, tiled with tiny identical gray squares. Pressing one of them opens secret door...

<sup>14</sup> The day that 15-year old Brad Steward from Salt Lake City discovered the grey dot and informed Atari and eventually the world about it. Speaking of which, Atari finally decided to cash in on the idea and announced more secrets in later titles.

to have caused a temporary shortage of 100 yen coin in Japan. Urban legends say that fans tried to acquire them at any price, just to throw into the machine and play another round of fighting alien invaders (Miller, Vandom, McBrewster, 2010). Additionally, holding down the reset button while turning on the game allowed for double shooting, which is a huge advantage. Other games included similar advantages. Usually it was enough to press the appropriate key combination while loading or sometime during the game to get an extra life or other special powers. Hidden places, like secret rooms or additional chambers were still in fashion, but they did not substantially change the course of a given game. There were also hidden eggs, which gave additional entertainment for those who already played and knew the game well. It prolonged the game's life on the market. One could, for example, experience the whole story again from another character's perspective and use additional objects, weapons or superpowers. Some vivid examples are the ability to launch cows from a catapult or spawn  $E=mc^2$  troopers (a nuke missile unit) in *Age of Empires*. Regardless of the objective purpose of creation and the form of "Easter eggs", they have become an additional goal of the game. Players enjoyed and raced in searching for hidden places or features and gained fame when they were the first to find them (Consalvo, 2007).

### **An avalanche initiated by Easter eggs**

The first egg was a *cheat*. Robinett's bosses probably wouldn't be so happy to allow him to place one in "their" game. It soon appeared that real, useful cheats, codes, and secrets are in fact desired by users. There were more and more, especially after games became more and more complex and difficult to complete. Finally, a totally new industry grew around games. Magazines that promoted games began to publish descriptions, hints, and information about hidden features. Users also became more active and started to share their own discoveries and achievements (Consalvo, 2007). In Poland, where availability of these publications was limited, players passed each other old copies of *Amiga action* to rediscover, being richer with the secret codes table, their favourite game later that night. Some lucky ones had the opportunity to copy the 3.5 inch diskette attached to the magazines. There was a new game and a couple of demos in its 880 kilobytes (now 3.5-inch floppy disk image has survived only as a "save" icon in the text editor in which we write these words). Paper magazines were eventually replaced by online versions, and above all by user generated websites and forums. Players discovered and created lists of hidden features, shared tips to

walk through more difficult game levels, and showed off their achievements. Nowadays websites and forums are gradually being replaced by Youtube and similar services. After all, why waste time reading through descriptions of levels when you can just watch a movie. A movie allows to easily boast about ones gaming skills, achievements, or modifications introduced to a game by oneself (more on this later).

### **Hardware, or “heavy” equipment to cheat**

Cheats, codes, and guides served for soft-cheating. But increasing requirements set by game developers led to design of equipment for cheating. In the beginning, pirate chips enabling consoles to run pirated games or legal games issued on other markets appeared. But from our perspective hardware add-ons like *Action-replay*, that equipped user with a “divine button” allowing introduction of code modifications or switching between game modes, are much more interesting. Despite the “divinity” of the ‘freeze’ button, the process of game modification was quite tedious and required patience. To understand why, you would have to experience the disappointment when, after half an hour of loading a game from cassette deck and typing several ‘pokes’ on C64 keyboard<sup>15</sup>, it turns out that you made a small mistake switching places of the digits in memory address. This is the idea of all the devices of this type – after loading a game they allow for access to memory to find the right addresses and change values of parameters, such as number of lives, amount of energy, or allow usage of specific types of weapons, vehicles, etc. To compare – nowadays applying a *Minecraft* mod takes only as much time as downloading an archive from the mod’s website and extracting files to a specific folder. Consalvo (2007) mentions charges posed by Nintendo towards Galoob, after issuing their Game Genie hardware add-on. Nintendo accused Galoob of spoiling the market and shortening the lives of their games by making them too easy. According to Nintendo lawyers, Game Genie allowed players to complete games too fast, which in consequence lowered their satisfaction with the game. But research proved something opposite: applying devices of that kind both increases game satisfaction and extends its life. Advanced and skilled players first go through the game without any hardware aid and then come back to experience it again in a totally new form, or simply skip the boring

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<sup>15</sup> Poke – one of the BASIC programming language commands. It’s used to change memory value under specific address. For example, in ZX Spectrum Mario Bros. entering [POKE 44079,0] gave unlimited lives.

parts that they would otherwise have to pass again. It would scare off many, for sure. The much more numerous group of casual or very young players may, thanks to hardware addons, can enjoy a game that would otherwise be too hard for them. Increasing complexity of games leads to a situation in which only professionals can use some features. Therefore hardware cheats extend a games life and also includes casual players that, without cheating, would get frustrated with endless attempts to pass through harder levels and likely quit.

Players voted with their wallets, proving that Nintendo's accusations are at least exaggerated. Used consoles sales data speak for themselves. At least  $\frac{1}{4}$  of used *Playstation*, *Xboxe*, and *Wii* consoles sold on *Allegro* auctions were modified to enable cheat-code applications (run pirated versions of games). Ads placed by firms offering mounting and service for such extensions fill a couple of pages of search results. User declarations support this data. According to our results, 22.5% of players consider console modification (especially to be able to run pirated games) acceptable<sup>16</sup>.

### **Rules of the game**

Most users learn the rules of a game while playing it. Printed manuals showing how to move your character, use gestures, or what controller buttons are for often stay in the box. The code of a game contains all necessary information, such as rules of moving across the map, paths allowed for the player, features of the objects and rules of interacting with them. Moreover, it also includes a set of possible behaviours towards other players and *NPC*<sup>17</sup> or necessary steps so that the plot of the game can progress. It means that the majority of the rules are kept in the code, and all of them influence the implicit players' rules of interaction.

Therefore the code's developer states the laws for players (Lessing, 1999). This original remark was made regarding the Internet, but it can also be used for games, with the difference that for gamers these rules often become a challenge. What can be done to bypass the rules of the code? We can, for example, ask an older brother for help (this is one of the most frequently used strategies by one of the author's children – the level of frustration of the

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<sup>16</sup> Results of our own research are described with more details further in this chapter.

<sup>17</sup> NPC – non-player character – common name used for i.e. bots or agents, who are controlled by code of a game (commonly said “computer” plays them).

younger brother decreases significantly after he gives the controller for a few minutes to the older one), looks up solutions on forums, or watches a *walkthrough*<sup>18</sup> on Youtube. These actions have become common since the first magazines with guides and codes of games appeared. A secret code or a combination of buttons may trigger regaining full energy or lost lives, adding powerful weapons or discovering pieces of the map hidden in the fog of war. Special equipment can be used to change the parameters of the game or to load scripts that will. Finally, advantages in the game (like armor, protection, tools needed) can be bought for real money on illegal auctions outside the game. The list is not limited to those possibilities, and all of them can be seen as cheating... or not. Gamers are divided into groups from rejecting all sorts of facilitation to accepting some (or all) of them.

### **Cheating according to gamers**

Between the years 2001 and 2004 Mia Consalvo (2005) conducted in-depth interviews and surveys among active players, recruited from students, and through forums for gamers. An analysis of user statements distinguished three types of behaviours seen as cheating, which can be located along a continuum. Similar studies have been carried out by us in 2013. 134 participants were surveyed and 116 full answers were analysed. Users of the most popular Polish forums for gamers anonymously filled out a questionnaire regarding their understanding of cheating and acceptance for different kinds of actions which could be considered as cheating. The questionnaire also contained several questions about lies and minor dishonest behaviors in the real world. Respondents were also able to report a description of interesting and spectacular fraud that they experienced or heard of. The results of Consalvo's (2005) and our research are consistent, and will therefore be presented together.

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<sup>18</sup> *Walkthrough* is a set of advice or a short video showing the pass through of subsequent levels of a game. Videos are usually prepared by players, include their own comments, and are placed in blogs or services like YouTube.



## **What does it mean “to cheat”?**

Does it “take **two** [players] to tango”<sup>19</sup>? If we take the wide definition of cheating in games, the answer is “not necessarily”. “Any form of obtaining advantage in an unfair way” (Hamlen, 2012) includes the use of immortality codes found online that cause energy or lives to never end. Another option is to assure that the player is reborn after each loss of life. With help of various codes the character is able to access unlimited wealth, all possible equipment, or unnatural skills. The top exploit is the God mode which gives unlimited powers: the character knows all, sees all, and does anything while remaining insensitive to opponents’ actions, stands out of the game rules.

Apart from the rules written in the game code there are also informal rules that emerge somewhat spontaneously within the community of gamers. Breaking the rules of code requires specific skills or at least putting some effort in finding the method elaborated by other, more advanced gamers and is therefore more difficult. Breaking common, informal rules is much easier, though neither more frequent nor acceptable. An analysis of American and Polish gamers’ statements showed that gaining an unfair advantage constitutes the basis of user definition of cheating. Attitudes of gamers can be seen as a continuum, where the border between fair play and cheating can be fluent, and gamers adjust their opinions of specific behaviours to the game rules and their previous actions freely.

## **Everything but one’s own effort**

At one end of the continuum there is a small group of the most rigorous users. They accept a very broad definition of cheating. Consalvo quotes a statement of one of the interviewees who defined cheating as “everything except walking through the game by yourself, with an exception for your friend’s help, if he or she plays with you and helps you to solve a problem” (Consalvo 2007, p. 88). Apparently even a wide definition included exceptions. Consalvo’s research was too limited to estimate how many purists are among American gamers. It can be assumed that only few. Having used quantitative methods, our research allowed us to assess this number more precisely.

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<sup>19</sup> More liberal gamers declare that you can cheat only on other player, not on a program, bot, etc. We write about it further in the article.

We want to point out here that the given numbers ought to be interpreted with caution due to the sample selection. It can be said that the soft approach dominates in Poland. In a group of 116 respondents there were only two gamers who represented the rigorous attitude towards cheating. They considered cheating to be even such activities that were accepted by wide majority, like watching *walkthroughs* or reading online guides (77% of respondents claimed it is not cheating). Consalvo's (2005) in-depth interviews suggest these people enjoy solving puzzles by themselves. Positive arousal comes from breaking a deadlock in a game. The most vivid example can be found in action games, where the imagination of game developers causes deep helplessness even in the most advanced and experienced players. For instance in *Machinarium*, issued by Czech's independent studio *Amanita Design*, the progress depends on solving many small and gradually more difficult puzzles, like finding or moving objects and interacting with other characters. A player takes the role of a friendly robot Josef (named so after the creator of the word "robot", Josef Čapek, brother of wider known Karel), who travels across a city of machines ruled by evil robots to find his kidnapped beloved. On one of the first, basic levels the main character's way is blocked by water soaking from a pipe. Water is obviously bad for robots because they can become rusty. Therefore, he needs to find a way to overpass the blocked sidewalk without getting wet. A player must execute a chain of actions just to find the only possible solution (caution: do not read this part, if you have not yet pass this level!): one must move standing nearby containers and climb onto them to a hidden control panel and then choose the correct combination of settings which will make a small amount of oil leak out. The oil slick attracts a small robotic dog which comes and starts to drink it. Josef has a chance to catch the doggy for a short time by using an earlier found sucker. The doggy must be led away to the worried owner, who gives Josef an umbrella in return. Easy to guess, the umbrella makes it possible to cross safely over the water barrier. While solving this task (I recall – one of the easiest) many things can go wrong. *Machinarium* is a "point and click" type of game, in which user can launch mechanisms and move objects in reach of the character. It means that to do something one must be nearby and in the right position. Sometimes one must climb on something, squat, or lie down to reach the right lever or item, under the condition that one knows what must be clicked and where these items are located. Player can endlessly try to find the non-existent way to the doggy (he is running around on a platform that one cannot enter from the sidewalk) or to catch him by luring him with the sucker, which is tied to a rope that will be always a bit too short. Even if one quickly comes up with the idea to lure the dog with oil, it will be difficult to find the control panel of the distributor or, if one eventually does it, to discover a way to reach it. It can also be

challenging to figure out the correct combination of switches – the inconveniences could be listed further. Unsurprisingly less than 2% of players feels pleasure in finding the solution by themselves, but 77% would not mind to glance at hints<sup>20</sup>. Aarseth (1997) writes directly about the revelation gamers experience after long hours of feeling helpless, due to ineffective solution seeking. The feeling of pleasure while solving a problem can happen only under the condition of prior helplessness, and the stronger the helplessness was the longer the pleasant mood lasts. The psychological explanation seems simpler and more correct: the emergence of a problem which cannot be solved for a long time leads to its incubation. After some time the user gains insight and awareness of the solution. Insight is usually accompanied by positive affect (Wallas, 1926).

Gamers with a rigorous approach towards cheating allow some normally rejected solutions, but only in very special cases, when they get stuck somewhere in the game and their level of helplessness reaches a critical point. Only then is friendly help, reading a manual posted on-line or, more and more frequently, watching video tutorials on Youtube acceptable. Consalvo (2005) claims these users hesitate to do it as long as possible due to the fact that every glance into a manual takes a bit of pleasure coming from the “revelation” or insight. So cheating is acceptable if one loses constantly on a certain level, or to walk faster through boring levels when he or she plays a second, third time because then pleasure is derived from a different source – like winning, progressing in the game, or simply satisfying his or her curiosity.

What is wrong with people who do not find looking for hints cheating at all (77%) and accept watching or reading guides (73% and 77%, respectively)? Do these users consciously deprive themselves of pleasure? Probably not. It would be odd if the majority of gamers would accomplish subsequent levels emotionlessly. In their cases positive affect comes from a single fact of finding the solution, whatever the way was. Executing steps provided by other players can give satisfaction by itself. Also, a different way of competition can appear. Though tasks given by the game developers can be accomplished better, faster, more efficiently, and in a more creative way than manuals and videos suggest. This issue obviously requires more thorough studies.

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<sup>20</sup> Authors deliver hints by themselves, but to get them, one must win in a mini-game.

## Code is sanctity

In the middle of the continuum are players who do not mind checking on hints, manuals, and teaching videos, but reject any forms of interference in the code (and rules) of a game. The difficulty of defining and identifying this group is related to blurred borders of the concept of “interference in code”. In the strict sense it means breaking and changing the code of a game – users can break into and edit some files or exchange the original ones to the modified ones with new instruction.

Code can be amended in many ways and for many purposes. Hard interventions are usually classified as cheating and less accepted. Here can be listed entering codes enabling the usage of characters or equipment unavailable on the basic levels (for example any weapon giving advantage by providing a bigger striking distance, while in the beginning only the basic weapon is available and one needs to fight for any upgrade). Other benefits might be, for instance, access to more advanced levels without unlocking the basic ones or to the memory of the game, change of some parameters to become immortal, and/or to have unlimited sources of energy and/or ammunition. 29% of Polish gamers classify this kind of action as cheating. At the same time, 51% of them (53% in the whole sample) argue that these are acceptable under the condition that they are used in the single player mode. In this case the opponent is the game algorithm, not a living player (this has become a key point for the further level of the continuum, but more on this later).

It seems necessary to distinguish a subcategory of behaviours related to development and usage of unofficial (or semi-official) modifications of a game, so called mods. A mod is without a doubt and by definition an alteration done in the original code of a game. It aims to modify the method of operation of a game. Usually mods enrich the original version by new elements (levels, characters, weapons, items, models, textures, rules, mechanics, physics, play modes). Such mods are called partial conversions. A full conversion includes basically a change of everything except the original game engine (although sometimes the engine is modified too). As a result we get a completely new game. Sometimes the original game and the mod even belong to totally different genres. As an example serves the modification of *Half Life 1* (a classic science-fiction game, FPS type) – *Earths Special Forces* based on the popular cartoon *Dragonball Z*. The world, character models, and player perspective change there. Instead of the gloomy world of Half Life, we are moved to the sugary *anime*, where fantastic warriors jump, fly, throw energy, and fight with each other. All this is seen by the player from a third party perspective. Even more spectacular is *Q3 Rally*, which transforms

*Quake III Arena* (FPS) into a car race. The most popular full-conversion mod is *Counter Strike* (CS). Due to its popularity it started being supported and later officially developed by the original version's authors. This approach slowly becomes a rule, because currently prepared mods are becoming more and more professional. Game producers see growing potential in users' creativity more often and more quickly provide special tools for mod development.

Partial conversions are created much more frequently since they require less effort and lower skills. *Counter Strike* excels in the number of mods – searching for CS mods gives 715 000 000 hits, which demonstrates well the scale of this phenomenon (of course this is not the number of actual available mods, but references and discussions about them, though within these results can direct links to specific files can also be found). For comparison, if we look for *Half Life* mods we get 114 000 000 hits, for *Quake* (all versions) “only” 20 000 000, and for the Polish *Wiedźmin* – 182 000 hits. An interesting example is *Minecraft* (one of the most popular in this regard – 228 000 000 hits). In the era of photo-realistic 3D games giant popularity was won by an independent game, initially developed afterhours by one man only. Simplified graphics and physics make the game look like a student's project from the 90's. It is worth to note that children were also encouraged to creatively develop the game. For them, *Minecraft* became literally and metaphorically a sandbox for young talents, adepts of programming and graphics (although in terms of graphics it may be an exaggeration). Testing mods became a popular topic on Youtube channels. Young (sometimes very young) gamers gain thousands of fans, who wait impatiently for the next recorded or streamed live games. Recently a crowd of fans warmly welcomed one of the most famous Youtubers in Warsaw's Agrykola Park: Polish Penguin. It is therefore not surprising that 73% of Polish players accept mod creation, and 66% do not see anything wrong in using them.

34% of games are the vanilla versions. Vanilla means the original, clean version published by the authors. The name probably comes from vanilla ice cream, which is usually the most popular, basic flavour. The New Hackers Dictionary defines them in this context as the “default” ice cream (Raymond, 1996). Servers can be found where only users of vanilla games are let in. They can be classified as the purists for whom code is not just a law, it is sanctity.

In a broader sense a crime against the code can also mean rising against hidden rules which technically are not an interference in the code itself. Purists would say that it is just a behaviour inconsistent with the programmer's will and the idea of the game. An example could be glitching. One of the most famous (already classic) glitches was discovered in Super

Mario Bros, produced by Nintendo for the console NES in 1985. In this famous platform game player takes on the role of Mario, a friendly plumber with Italian roots. His goal is to break through the Mushroom Kingdom, outsmart the evil servants of his eternal enemy Bowser, and to set free the Princess Peach. His brother Luigi may also lend a hand (controlled by a second player). Mario spends most of the game jumping on stairs, platforms, clouds, or mushroom caps. In this case it is obviously pretty easy to lose life, which is why authors introduced the possibility to collect extra points that from time to time can be exchanged for lives. One of the ways of winning points is jumping on tortoise shells called Koopa Troopa's. After Mario jumps on the tortoise, it goes in the same direction as the user. The basic physics in the game makes the tortoise bounce off walls, trees, and stairs. One needs only to jump on a tortoise standing nearby and repeat it multiple times to collect more and more points. Thomsen (2013) gives an example of one hundred Mario lives, calling using these glitches anti-game (after Huizinga's *Homo Ludens* 1998). In a comment to the article one of the users, Chris Wagar, strongly attacks this approach. His voice represents gamers with moderate views and accurately sums them up. Wagar writes: "... using glitches ... is an obedient searching for the best usage of the games rules ... it is an example of the deepest understanding of the rules)".

An extreme example of "the deepest understanding of the rules" is *rocket jumping*. It is a technique enabling very far and/or high jumps that are impossible to execute in other ways. The technique consists of firing a rocket or a grenade into the ground or a wall nearby and jumping at the same time. The energy of the explosion accelerates the jumping character and allows them to traverse much bigger distance than with a regular jump. *Rocket jumping* was used for instance in *Doom*. Horizontal jumps were used to enter secret exits, which were unavailable or hard to access. Also in *Quake* rocket jumping won high popularity. Both horizontal and vertical jumps were used to unlock regions of the map that were impossible to get to in any other way. Obtaining the skills necessary to execute rocket jumps gives the player a huge advantage over others. In the case of single player mode users can reach the goal of the game in a way that is unpredicted by the author. Objectively, this could be counted as cheating. Or as great fun.

### **Creative resistance**

Producers of games and game equipment have been trying from the beginning to set some borders for players. Nothing annoys a real gamer more than an attempt to determine how he or she should have fun and why in this particular way. Actually it is a bit silly – to provide an

advanced tool to a skilful user and to expect that they will not make good use of it. Like giving someone a sniper a rifle and expecting that he/she will look through the telescope and observe a rare species of birds. People (and companies) have been attempting to modify consoles since they were introduced in the market. A widespread practice is to install chips that allow reading of pirate copies of games, which is obviously reprehensible. Meanwhile, changes also occur that are inconsistent to the producer's intentions but are nevertheless very interesting, which shows the spread of possible actions of advanced users. It is hard to track the source of such actions because once the information is posted online it is instantly copied, upgraded, or amended by a broad range of Internet users. The beginning was, as usual, quite innocent: a gap was found in Linux, the Xbox operational system, which allowed the omission of default security codes. It turned out that this can be accomplished by loading a specially prepared copy of the game *MechAssault*. Hackers who came up with the idea probably did it to take advantage of Microsoft, though their followers had various ideas of their own. Consoles for gaming are basically very cheap and efficient computers, which is why they were used by scientists to build computing clusters (*Xbox Linus Cluster Project*, or *Academic PS3 Computing Cluster* from North Carolina State University). Clusters were then successfully used to analyse large amounts of data (DNA sequences, view from radio telescopes, huge databases, particles modelling).

### **Some of the (alleged) consequences of cheating in games**

In real life pupils and students cheat more and more often. Over 60% of students admit that they cheated at school or university, although not always consciously. The results indicate that there is a discrepancy between the definitions of cheating shared by teachers and students, respectively. Changing the requirements posed by schools and colleges influenced perceptions of cheating. Many students do not perceive their various activities as cheating as long as they are not specifically pointed out and carefully described by a teacher. Therefore it seems that a universal definition of cheating at school has disappeared. It was replaced by the new definitions, which are not only different among individuals but also very situation dependent (Hamlen, 2012). You can argue that cheating has mcdonaldized. More and more people believe that some behaviours are not cheating as long as someone tells you not to do it right here, right now. Similarly, they are not able, without clear printed warning, to associate

the fact that the beverage they ordered is tea and that the cup will be hot, leading to second degree burns.

The modern education system puts more pressure on achievements – marks and grades. Pupils and students are under constant stress. Preparation before tests, exams, and contests does not necessarily mean learning something useful any more. Therefore it's harder to see any ethical dilemmas connected with the way to achieve the major goal – a good grade (Stephens and Nicholson, 2008). Is it already a permanent change in moral standards? According to Hamlen, experience from other, informal environments may lead to changing standards and an increase in the proportion of cheaters. The variety of definition of cheating in games that function among players (as it was shown before) poses problems with research planning and, later, interpretation of results. Additionally, some strategies are or are not treated as cheating, dependent on the situation in which they were applied or the goal of the game (Consalvo, 2007; Hamlen and Gage, 2011). For example, finding glitches (the 100 lives of Mario case, described earlier) is a reason to feel proud for some and dishonest for others (Bainbridge and Bainbridge, 2007). People differ from each other in the motives they have in a game. One may play to become a master, which requires exceling in the rules of the game and applying them<sup>21</sup>. One may also try to beat everyone, and all is fair (Hamlen, 2012). There are results supporting the hypothesis of personality factors as sources of dishonesty, which are manifested both in game worlds and in reality. Ventura, Shute, and Kim (2012) found that pupils and students with lower conscientiousness play more frequently. Downloading illegal content from the Internet is related to lower levels of agreeableness, conscientiousness, and emotional stability (Karim, Zamzuri, and Nor, 2009). On the other hand it's been noticed that technology is constantly ahead of regulations, customs, and guidelines applying to school and college tasks, which leads pupils and students to creatively solve problems with the use of the newest available and known to them means, and sometimes cheating unconsciously (Akubulut, Sendag, Birinci, Kilicer, Sahin, and Odbasi 2008). Modern technologies, including video games, are introduced to education systems to make them more attractive. School handbooks available in Poland (including packs for pre-schoolers) usually include additional digital content such as educational games. If games by themselves lead to unfavourable changes in moral standards, then it is possible that by harming children we cause harm to

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<sup>21</sup> But the problem of counting creative usage of glitches as cheating returns here. Is a player who strictly applies the rules of erroneous code cheating?



ourselves. Does the use of modern technology, especially video games, really encourage children, youths, and students to cheat?

Research results do not confirm the hypothesis of negative influence of video games on standards of honesty at school or in college. Tendency to cheat is a personality trait or learned strategy applied in all domains of life (Hamlen, 2012). Players that cheat, i.e. avoid problems instead of solving them, are more likely to quit a challenge when they cannot overcome the problems that it brings and also apply the same strategies in other domains of life. It appears that when they cheat at school or at work (avoid effort and obstacles etc.) also cheat in games. But games are not related to an increased tendency of cheating in real life. What's more, interesting conclusions may be drawn from observation of gaming style. Moderately tenacious players that spent 11 to 500 hours in one game had better marks at school than less tenacious players (1 to 10 hours in a game). There were no systematic relationships between school marks and number of hours spent on playing and amount of games played in a preceding year (Ventura et al., 2012).

Maybe cheating in games can serve an important informational role. In De Simone, Verbruggen, Kuo and Mutlu (2012), researched players rated their opponents (in fact it was an algorithm, which they did not know) on various dimensions. The computer was programmed to cheat in half of the cases and play honestly in the remaining half. The computer-opponent was rated as more human when it cheated. Authors concluded that cheating is human.

### **Cheating in games and life – a study of Polish players**

Polish gamers<sup>22</sup> are moderately liberal. Only one fourth of them think that every change in game code is cheating. Three out of four do not consider gleaning the solutions to levels on video tutorials or discussion groups as cheating, and a similar number of players do

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<sup>22</sup> A total of 140 gamers responded to invitations placed on the largest discussion boards for gamers in Poland. We referred to the most popular games at the time, namely Counter-Strike, League of Legends, World of Warcraft and Minecraft. 24 responses were excluded due to large number of missing values or other procedural reasons. 116 responses were further analysed. The mean age of participants was 18, vast majority were male (97 participants, 83,6%), there were also 5 females (4,3%) and 9 (7,8%) persons who refused to give the information about gender. 72,4% play video games daily, 19,8% play a couple of times a week. The rest play in a more casual manner.

not see anything wrong in buying virtual objects (like weapons or elements of armor) that they would have to win otherwise. It is therefore nothing strange that results show that more people accept behaviours objectively classified as cheating than admit they are cheating in games. 47% of respondents endorsed the question “Do you happen to cheat in games?”, while 76% accepts looking up solutions of puzzles and tasks in the game (let’s call them “peepers”) and 82% do not see anything wrong in (objectively) active cheating (using codes, aimbots, etc. and also hardware, add-ons to increase their advantage; let’s call them “cheaters”<sup>23</sup>). There are limitations to this distinction. First of all both groups have some commonality. Many peepers also belong to cheaters, and being a cheater increases the probability to be a peeper. It does not refer to all members of the groups and some distinct traits can be concluded. Secondly, our results also show that Polish players are extremely ethical when it comes to contact with other players in common gameplay and moderately liberal when it comes to single play. Cheaters usually cheat in single player modes, and the main strategy is using codes. Other ways of cheating are used by the minority. Only one person out of 116 respondents considered using codes in multiplayer mode acceptable. Less than 5% (one in twenty players) saw nothing wrong in the use of aimbots (programs enabling automatic aiming) and other similar add-ons that facilitate playing. More complex actions, such as modification of code by means of hardware add-ons, giving access to the code during or after loading a game, are also criticized by the majority. Barely 8% of respondents accept such actions.

The question remains whether cheating in games is anyhow related to acceptance of various ways of cheating in real life. Comparing the answers of honest players with peepers and cheaters is in line with Hamlen’s (2012) results, with some interesting exceptions. Proportions of honest players, peepers, and cheaters are usually similar. For example: downloading pirated games from the Internet is accepted by 34% of peepers, 36% of cheaters, and 30% of honest players. Downloading pirated movies and music is somewhat easier, and therefore more popular. Acquiring illegal copies of movies is acceptable for 43% of peepers, 46% of cheaters, and 42% of honest players. 47% of peepers download illegal music. This action, maybe not very clearly but with statistical tendency, discriminates cheaters: 51% of them accept it, while only 27% of honest players do. This ends the case of “online cheating”. Can we expect moral decay after leaving a computer game?

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<sup>23</sup> We label them „peepers” and „cheaters” not to judge anyone. The labels are in our opinion rather humorous in nature and please treat them in this way. Offending anyone is not our intention, and we apologize in advance if it happened. Let the fact that one of the authors is both a peeper and cheater speak in our defense.

The widely discussed (by Hamlen) topic of cheating at school or college does not differentiate participants. Cheating on exams, tests, and small quizzes is accepted by 32% of peepers, 33% of cheaters, and 25% of honest players on average (differences were not significant). As in the case of American students, games have nothing to do with academic honesty. There are no statistically significant differences in more or less serious cases of cheating other persons. 17% of peepers and 19% of cheaters consider using someone else's phone acceptable (closely matching 17% of honest players). Cheating in romantic relationships is totally unacceptable, even if it refers to one time experiences. Having an affair is accepted only by 2% of peepers, 3% of cheaters, and 7% of honest players.

Research conducted by the Central Bureau of Public Opinion shows that bribes are still a problem in our country. 83% of Poles complain about corruption. The most corrupt groups are, according to respondents, politicians and doctors. Gamers look surprisingly good in that comparison. On average 20% of them accept giving bribes to policemen, public clerks, and doctors. Peepers are slightly less likely than honest players to bribe public clerks (8% and 21%, respectively) and doctors (14% and 30%). Such a tendency was not observed among cheaters (20% accept bribing office clerks and 11% bribing doctors). There are no differences in acceptance of bribes for police officers (peepers – 8%, cheaters – 10%, honest players 11% on average).

The money that we receive can be a temptation that we cannot overcome. There's a widespread belief that salespersons and waiters make mistakes when giving people change, usually in favour of themselves. A friendly local shop owner convincingly explained this phenomenon to one of the authors, but we will not quote him here. Anyway, in theory mistakes in favour of customer can also happen. What do gamer-customers do? If they are a peeper, they will probably give it back. Shop owners should beware of gamers-cheaters. 39% of them are ready to keep the erroneous change, while only 13% of honest players would.

Despite the above described slip we can probably be optimistic. If we consider larger sums of money than just small change, gamers look much better. Recently there was a report in the news that two police officers withdrew money from a broken ATM 24 times in 33 minutes. The ATM doubled the input amounts. Of course they were not the only ones. In 17 hours and 15 minutes of erroneous operation, different users withdrew in sum 15 600 PLN (about 5000 USD). There were only 6 persons that did not fall into ATM Fever and did not continue after the first doubled withdrawal. What do our players think of it? Peepers appeared

to be more honest than honest players. 62% of them considered keeping such money inappropriate, and only 42% of honest players shared this view. It's even better in the case of a found wallet. Only 19% of peepers would keep other people's money, compared to 38% of honest players. There were no statistically significant differences observed for cheaters. It seems that when taking a bank's money we may feel like Robin Hood or Janosik, but robbing an innocent other is wrong for most people.

Building good interpersonal contacts sometimes require behaviours that are not very honest, but commonly accepted. Let's take white lies as an example. Cheaters are more willing (63%) to accept lies that are aimed at pleasing someone (or at least not to upset someone) than honest players (18%).

### **Games are the mirror of life in “meat reality”**

It is hard to find people that do not play any video games. The majority of respondents do it at least casually. Development of new technologies has enabled people around the world access to computer generated three-dimensional environments. Hundreds of thousands of people inhabit virtual worlds of different kinds and regularly move to places that do not physically exist. Virtual world users engage in social interactions with each other as avatars and also with digital agents, anthropomorphic (usually) representations of artificial intelligence. Trade of virtual goods is common. Avatars produce, collect, buy, and sell objects that do not physically exist. We could expect an increasing influence of virtual world experience on behaviour in reality. Nevertheless, we experience a balance of influences, or even the opposite direction of influence.

Until recently games were viewed as a cause of negative phenomena, such as increases of aggressiveness (e.g. Yang, Huesmann & Bushman, 2014, compare also Ferguson, 2013). Today we know that a proper dosage of certain games may be a cure (Anguera et al. 2013). New studies show that the influence of playing video games on real life behaviour is limited. Reversed influences are rather observed. Personality factors play a key role in behavioural regulation in both virtual and real worlds. Cyberspace is a mirror of the meat world<sup>24</sup>.

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<sup>24</sup> Meat world, in contrast to virtual reality, simply depicts the world around us. It is just a common label. It appeared e.g. in the Financial Times article „Warning: interruption overload” (Rigby, 2006).

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### Dictionary of (some) used terms:

*Action replay* – a device that enabled freezing the execution of the program and changing the code. Thanks to this modifying a game could become accessible for regular players. It was enough to press the “divine button” and you could enter codes copied from your friends or from gaming magazines.

*Anime* – here – refers to Japanese cartoons that are characterized by a particular way of drawing characters and the world (simplified characters with large eyes).

*Cheat* – usually it is a piece of code or script that introduces changes to the original game, making it easier for players to finish. In fact it is gaining manual control over a game and changing rules programmed by developers. In many games there is a possibility to call the programmer’s console and enter commands that give access to equipment, locations, etc.

*Cheater* is a person that cheats, but it does not reflect the broader meaning of this word in the context of games and game worlds.

*Easter egg* – an add-on that is not a part of the story in a given game. Usually it is some hidden message or additional room or level added by programmers. Initially it was a form of self-promotion of game designers. Nowadays Easter eggs have become complex add-ons for fans. Finding them is frequently treated as another goal of the game.

*FPS* – first person shooter – game genre, characterized by 1st person view of the game world.

*Freeze* – „divine button” – pressing it enabled freezing of the program and changing of code input. See also *Action replay*.

*Geek* – freak or weirdo; a person exceptionally interested in (usually) one specific domain – here, computer geek – an individual that reflects the most obscure stereotype of a hacker (Raymond, 1996).

*Glitch* – an error in code that can be used by players to make the game easier.

*God mode*, i.e. divine mode of the game. Usually means that the character is immortal, has access to full inventory, sometimes also some special tools, and laws of physics do not apply to him (e.g. passes through walls, can fly, etc.).

*Hack* – in the context of computers, web pages, servers, games – breaking in, interference with code to gain illegal access to a *hacked* program, or introducing changes that were not intended by the developers.



*Hacker* – a person that possesses knowledge and abilities in programming and “enjoys exploring the details of programmable systems and how to stretch their capabilities” (capabilities that are frequently deeply hidden), as opposed to most users (Raymond, 2003).

*Hipster* – a person belonging to the subculture declaring independence from “the mainstream”, overly emphasizing his/her originality. Common characteristics: “artistic” outfit and unconventional interests (Wikipedia)

*Minecraft* – one of the most frequently modded games in present times. According to gameranx.com it offers gamers the largest possible virtual world (one map is 9.3 million times bigger than the surface of the Earth; the number of possible maps is  $5,27 \times 10^{66}$ ).

*Meat world* or *meatspace*, in contrast to virtual reality, simply depicts the world around us. It is just a common label. It appeared in the Financial Times article „Warning: interruption overload” (Rigby, 2006).

*MMO (MMO game)*– massive multiplayer online game. It is any game in which many people play with each other through the Internet.

*Mod* – unofficial modification of a game. A game that has been reprogrammed by its users (e.g. Garry’s Mod is Half Life modification). This label refers to all unofficial addons that enrich or alter the game completely.

*NPC* non-player character – a common label for bots, agents, etc, i.e. characters in a game that are being controlled by its code (commonly speaking, the “computer” plays them).

*POKE* - one of the BASIC programming language commands. It’s used to change memory values under specific addresses. For example, in ZX Spectrum Mario Bros. entering [POKE 44079,0] gave unlimited lives.

*Pong* – electronic version of table tennis, first popular video game in the world (Bryant, Davies, 2006)

*Sandbox* – is a type of a game in which players explore a relatively open world. It does not have linear action or levels. Achievements and goal are not mandatory, and achieving them does not end the game.

*Serious games* – games in which entertainment is not the main goal. Usually applied in coaching, therapy, learning, education, and research.

*Vanilla game (version) etc.* – unchanged version of a game. The name probably comes from vanilla ice cream – the default taste.

*Walkthrough* –a set of advice or a short video showing the pass through subsequent levels of a game. Videos are usually prepared by players, include their own comments, and

are placed in blogs or services like YouTube. Professional videos of this kind appear more and more frequently.

*YouTuber* – depicts a vlogger that is publishing his/her movies on *YouTube*. In this case it describes players that publish their gameplay and comment on it.